

KEYSTONE SYMPOSIA

on Molecular and Cellular Biology

Microbiome: Chemical Mechanisms and Biological Consequences (C3)

March 10-14, 2019 • Fairmont The Queen Elizabeth • Montreal, Québec, Canada

Scientific Organizers: Dennis W. Wolan, Peter J. Turnbaugh and Emily P. Balskus

Supported by the Directors' Fund

Abstract & Scholarship Deadline: November 8, 2018 / Abstract Deadline: December 6, 2018 / Discounted Registration Deadline: January 16, 2019

SUNDAY, MARCH 10

Arrival and Registration

MONDAY, MARCH 11

Welcome and Keynote Address

Jon Clardy, Harvard Medical School, USA
From Correlation to Causation: Phenotypic Screening of the Human Gut Microbiome

Microbiome Biochemistry Insights and Innovations

Emily P. Balskus, Harvard University, USA
Current Efforts and Insights in Biochemistry of the Microbiome
Elizabeth M. Nolan, Massachusetts Institute of Technology, USA
Host Antimicrobial Peptide and Pathogen Interactions
Laura L. Kiessling[†], Massachusetts Institute of Technology, USA
Glycan Recognition and Glycobiology

Short Talk(s) Chosen from Abstracts

Workshop 1: Chemical Biological Methods in Microbiome Studies

Short Talks Chosen from Abstracts

Small Molecules in Host-Microbiome Crosstalk

Speaker to be Announced
Lora V. Hooper, University of Texas Southwestern Medical Center, USA
Regulation of Host Immunity by Bacterial Signals
Kenya Honda, School of Medicine, Keio University, Japan
Microbial Regulation of Host Immune Responses

Short Talk Chosen from Abstracts

Poster Session 1

TUESDAY, MARCH 12

Microbiome Toxicology and Pharmacology

Peter J. Turnbaugh, University of California, San Francisco, USA
Metabolism of Drugs by Human Gut Bacteria
Shana Sturla, ETH Zürich, Switzerland
Impact of the Human Gut Microbiome on Chemical Metabolism and Toxicity
Nassos Typas, EMBL Heidelberg, Germany
High-Throughput Approaches to Study Microbial Drug Metabolism and Resistance
Libusha Kelly, Albert Einstein College of Medicine, USA
The Microbial Ecology of Xenobiotic Metabolism

Short Talk(s) Chosen from Abstracts

Workshop 2: Roles of Pharmaceutical Industry in Microbiome Research

Short Talks Chosen from Abstracts

Antibiotics and the Microbiome

Kim Lewis, Northeastern University, USA
Growth Factors for Microbiome Bacteria
Gerry D. Wright, McMaster University, Canada
Antibiotics Resistance in the Human Microbiome
Gautam Dantas, Washington University School of Medicine, USA
Predicting and Combating Biotic and Abiotic Disruptions to Diverse Microbiomes

Short Talk Chosen from Abstracts

Poster Session 2

WEDNESDAY, MARCH 13

Microbiome Enzyme Discovery and Characterization

Dennis W. Wolan, The Scripps Research Institute, USA
Functional Probes and Microbiome Metaproteomics
Aaron Todd Wright, Pacific Northwest National Laboratory, USA
Profiling the Dynamics of Xenometabolizing Taxa and Enzymes in the Gut Microbiome Upon Chemical Exposures
Jill Banfield[†], University of California, Berkeley, USA
Discovery of new CRISPR-Cas Systems
Michi Taga[†], University of California, Berkeley, USA
Vitamin and Corrinoid Synthesis and Transport

Short Talk(s) Chosen from Abstracts

Workshop 3: Cutting-edge Insights into Host-Microbiome Interactions

Short Talks Chosen from Abstracts

Emerging Technologies and Applications

Joel Kralj, University of Colorado, Boulder, USA
Bacterial Electrophysiology
Ashleigh B. Theberge, University of Washington, USA
Studying Cell Signaling in Complex Environments using Open Microfluidic Models
Rustem F. Ismagilov, California Institute of Technology, USA
Biophysics and Spatial Structure in the Gut Microbiome

Short Talk Chosen from Abstracts

Poster Session 3

THURSDAY, MARCH 14

Microbiome-based Natural Products

Mohammad R. Seyedsayamdost, Princeton University, USA
Activation of Cryptic Bacterial Gene Clusters
Virginia W. Cornish, Columbia University, USA
Modification of Biomolecules in Living Cells
Mohamed S. Donia, Princeton University, USA
Small Molecule-Mediated Interactions in the Human Microbiome
Sarah O'Connor[†], John Innes Centre, UK
Natural Product Discovery and Engineering in Plants

Short Talk(s) Chosen from Abstracts

Synthetic and Systems Microbial Ecology

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Adam P. Arkin, University of California, Berkeley, USA
Physiological and Genetic Dissection of Microbial Interactions in Subcommunities of Human and Environmental Microbiomes

Pamela A. Silver, Harvard Medical School, USA
Microbial Genetic Circuitry Designs and Applications in Microbiome Research

Danielle Tullman-Ercek, Northwestern University, USA
Bacterial Efflux Pump Engineering for Protein and Small Molecule Secretion

Meeting Wrap-Up: Outcomes and Future Directions (Organizers)

FRIDAY, MARCH 15

Departure